PHASES OF IRRIGATION IN UTAH.

RICHES COME SWIFTLY FROM IRRIGATED SOIL

Farm Products of State Reach Total Value of Millions Each Year.

Opportunity and Homes for Thousands of Husbandmen Awaiting Them --- New Ideas Put in Practice.

mals, amounted to \$16,467,346.

to the mineral production.) It can therefore, be said that these incise are not thriving, or that the engaged in them are not prosent. What we do undertake to say at the limit is not more nearly led in this direction than in miner are the opportunities which irrina affords utilized to the limit of are the opportunities which irrina affords utilized to the limit of present water supply. The observed a few simple principles will astonishing results. First, stop waste of water, in distribution, in many instances is deliberate; all, store the flood waters; third, go the senseless system of delivered, after the canals on time

Without the aid of an artificial water supply, agriculture and horticulture would be impracticable if not wholly impossible within this arid, intermountain region. It is true that there is some "dry farming," or what may be expressed as taking charges of the season, but if dependent on that Liah would not be able to make such a shewing as it can at present, nor even be considered at all as an agricultural state.

The soil is very rich as a rule, although to some extent deficient in humus or vegetable mold. With lucern, however, one of the most profitable crops the farmer can plant, that deficiency may be rapidly supplied without appreciable, cost. Unlike the soils where the rainfall is under no control and where the fertilizing elements are washed away to the rivers instead of being drawn from the rivers and distributed over the jand, they are not subject to exchaustion. If cultivated by a rotation of crops which includes lucern it will become constantly more productive, a feature of vital imporporation of the productive, a feature of vital imporporation of the productive, a feature of vital imporporation of the production exceeds. But the will support two cows. It follows, logically, that with such an advantage stockraising on the farm can be made exceedingly profitable, for it is about the most certain method the eastern farmer can adopt to secure a competency. Here the practice of the public range for stock feeding has established a habit which must be overcome before stockraising on the farm can be made exceedingly profitable, for it is about the most certain method the eastern farmer can adopt to secure a competency. Here the practice of the public range for stock feeding has established a habit which must be overcome before stockraising on the farm earlier years to depend wholly on the public range for stock feeding has estable most certain method the eastern farmer can adopt to secure a competency. Here the practice of the public range for stock feeding has estable most certain method the eastern farmer

shange the senseless system of delivering water from the canals on time the dules, which compels the farmer to be this crops to suit the water supply, istead of having the water as the rops may require; fourth, level the and to permit even distribution; fifth, rain to prevent over-washing; skylender and water less frequently seventh, plant such crops is relied largest income—get out of the active seventh, plant such crops as relied largest income—get out of the active seventh, plant such crops as relied largest income—get out of the active seventh, study your soils and contantly experiment that you may improve; ninth, study your markets and day your plantings to them; tenth, ive your boys and girls an education hat will permit and cause them to enough their vocation, so that they will not attribute the same number of laborers, with no rarger acreage, will produce more thinking to raise them to enter the same number of laborers, with no rarger acreage, will produce more thinking to raise them to enter its wide fluctuation in the pice and demand for them.

If half these suggestions are deaded on, that the benefits of irrigation to the direct return from the crop thermal product, and the work done this year is may be realized from a single acre's mail fruit grower and the orchardist. In the product, and the work done this year is so much for the future that in addition to the direct return from the crop thermal product, and the work done this year is so much for the future that in addition to the direct return from the crop thermal product, and the work done this year is so much for the future that in addition to the direct return from the crop thermal product, and the work done this year is so much for the future that in addition to the direct return from the crop thermal product, and the work done this year is so much for the future that in addition to the direct return from the crop the same and product, and the work done this year is so mich for the future that in addition to the direct return from the crop th

UTAH LAKE AND THE JORDAN RIVER

MAP SHOWING UTAH LAKE AND ITS WATERSHED WITH THE CANAL SYSTEM SUPPLIED FROM IT IN SALT LAKE COUNTY.

lake.

Beyond the Provo river the principal part of the work would have to be executed. The continuous stretch of dyke and drain ditch would extend for several miles, and most of the accumulated water would have to be pumped, although not to a great height even when the reservoir should be filled to its high level.

Cost Not Excessive.

proposed, to carry six feet of water above compromise point. In one such year there would be four times as much impounded within the additional six feet as they propose in an increase of eighteen inches, and allowing for evaporation, it will as well provide for at least two years of short supply.

Again, it will be advisable to study new sources of supply as well as to stop the waste and the leaks. Not all of the water that falls in the form of rain or snow on the mountains fin?s its way to the rivers.

The Artesian Water System

The Artesian Water System.

The mountains are full of water-carrying crevices, and veins on sand or loose material carry quantities of it to indeterminable depths. In a casin like this greater one of the former Lake Bonneville we find artesian water underlying.

like this greater one of the former Lake Bonneville we find artesian water underlying large areas, and the hundreds of wells above the lake in Utah, county attest the presence of these water beds at varying depths, some of them of great capacity.

At Geneva, on the very brink of a high embankment above the lake, there is a well flowing from a depth, if remembered correctly, of not much more than 200 feet, with such force that it would deliver a strong stream of forty or fifty feet above the lake level. What would a well of twelve inches diameter, if bored only from the water level, deliver? Two or three such wells would certainly furnish more water, right in the lake where it is needed, than such a canal as is proposed from the Weber could supply, and the cost would be but a fraction of the \$40,000 which the canal is estimated to cost. All along the eastern and southern shores of the lake are wells of exceptionally strong flow. We know there is a popular impression, which has no doubt grown from the attempts to save the underground flow at the canyon outlets, that there is no saving from such efforts. It should be noted that those waters are above the solid formation and may find the way back to the stream below as seepage. No one can pretend to claim that water taken from artesian wells, at the depths and in the locations noted, is not clear gain. If it had outlet into one can pretend to claim that water taken from artesian wells, at the depths and in the locations noted, is not clear gain. If it had outlet into the lake it would not have the force behind it to raise it to such heights. We also find all along the slopes on the east side of the Jordan, in Salt Lake county, and over large areas on the west side as well, artesian wells flowing strongly from 200 to 650 feet depths. These certainly afford a net gain to our water supply. All such artesian water beds are found between impervious beds of clay, and the force is due to the confinement where pressure from higher levels raises the water

Water from Tunnels. As we have said, not all the water that falls in the mountains finds its way into the rivers. Some of the rock formations have more crevices than others, through which water is cours-

On the Tributary Streams.

DRAINAGE NEEDED.

impounded in Utah lake, there is no reason to deter or delay the development of its plans.

Use Only Appropriated.

It is only the use of water that can be appropriated, and if it can be twice used for the promotion of useful purposes, so much the better for the state and country. Why the city or the canal companies should oppose the development of power from the water falling into their canals wherever possible, except it may be in the case of the present electric power plant in the narrows, and in view of the filing that has been made on the waters of the proposed reservoir, it is ultimately intended to bring all the city water by the high line canal to provide for the intended to bring all the city water by the high line canal to provide for the intended to bring all the city water by the high line canal to provide for the intended to bring all the city water by the high line canal to provide for the intended to bring all the city water by the high line canal to provide for the intended to bring all the city water by the high line canal to provide for the intended to bring all the city water by the high line canal to provide for the intended to bring all the city water by the high line canal to provide for the conditions were not such as to suggest a pressing necessity for a such as the conditions were not such as to suggest a pressing necessity for a such as in all other counties in the state, the time has county, as well as in all other counties in the state, the time has come—indeed, it came long ago—when provision for drainage is, quite as important as for it and profit by the suggestions, although the proof of Professor Gardner's assertions as to what reclamation will do for the district is convincingly given by the results which have followed tile drainage in three or four instances.

A Golden Opportunity.

Within the area surveyed it was shown clearly there are more than 190-190 acres of land which when the count of the firm and chief consideration.

The country is all the counties in the intended to